

ABSTRACT

A welding process for non-stainless steel workpieces using GTAW equipment and hydrogen containing shield gas on a first root pass is improved by using a shield gas delivery system comprising hoses or conduits made of elastomeric material having a moisture permeability coefficient of less than 275, preferably less than 100, and using a tungsten electrode composition comprising at least tungsten and lanthanum oxide, and preferably tungsten, lanthanum oxide, yttrium oxide and zirconium oxide. Preventing moisture permeation through the elastomeric hoses delivering hydrogen containing shield gas eliminates expulsion of fused weld metal during second pass filler welding over the root pass weld. Electrode life is enhanced using the tungsten compounds.